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Title of the Invention:

Link System from Programmable Controllers to an Upper Rank Computer

Abstract of the Disclosure:

The object of the present invention is to provide a link system from programmable controllers 2 to an upper rank computer 1 (see Fig.1) which prevents any one of the programmable controllers 2 from executing a request command from the upper rank computer 1 twice without the necessity of using any complicated communication controlling proceeding.

The upper rank computer 1 manages the programmable controllers 2, sending commands to a selected controller or controllers 2, which send to the computer 1 a signal representing the result of executing the command.

Fig.2 shows a communication flow chart of the computer 1:

at STEP 10 resending counter is reset ($N=0$);

at STEP 20 a command is sent to a selected controller 2 (Fig.4 shows the command format as comprising *start delimitation*, *destination controller*, *resending identification*, *command*, *data* and *end delimitation*);

at STEP 30 timer starts simultaneous with the sending of the command;

at STEP 40 a decision is made as to whether or not a response from the controller 2 reached within a predetermined length of time;

at STEP 50 in the negative case the count is increased one ($N \Rightarrow N+1$);

at STEP 60 a decision is made as to whether or not the count is over or below a predetermined value, for instance 4;

at STEP 70 in case of the count being larger than 4 anti-abnormal communication processing is conducted, and in case of the count being smaller than 4 the proceeding returns to STEP 20;

at STEP 80 in case of the response arriving at the computer within the predetermined length of time a check is made on the response data format from the controller in terms of whether or not the command has been executed;

at STEP 90 in the negative case the command appears to have been received by

the controller;

at STEP 100 in the affirmative case same command appears to have been sent repeatedly, and the sending of same command is made to stop.

As for the "*resending identification*" it indicates that the command is the one resent by the upper computer 1 in response to the request from the controller.